

Figure 1

Group Fixed-point Multiply

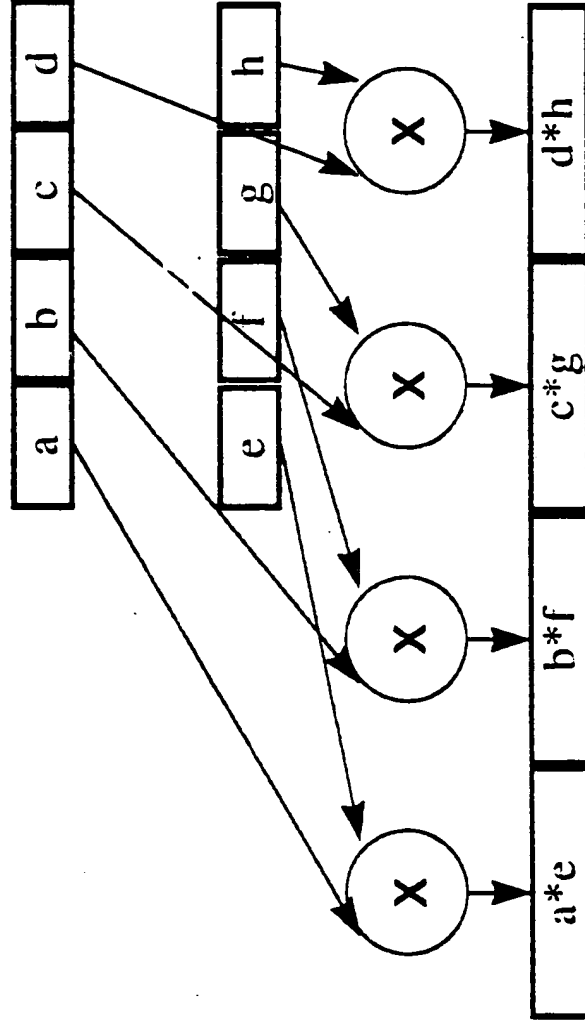


Figure 2

Group Fixed-point Multiply and Add

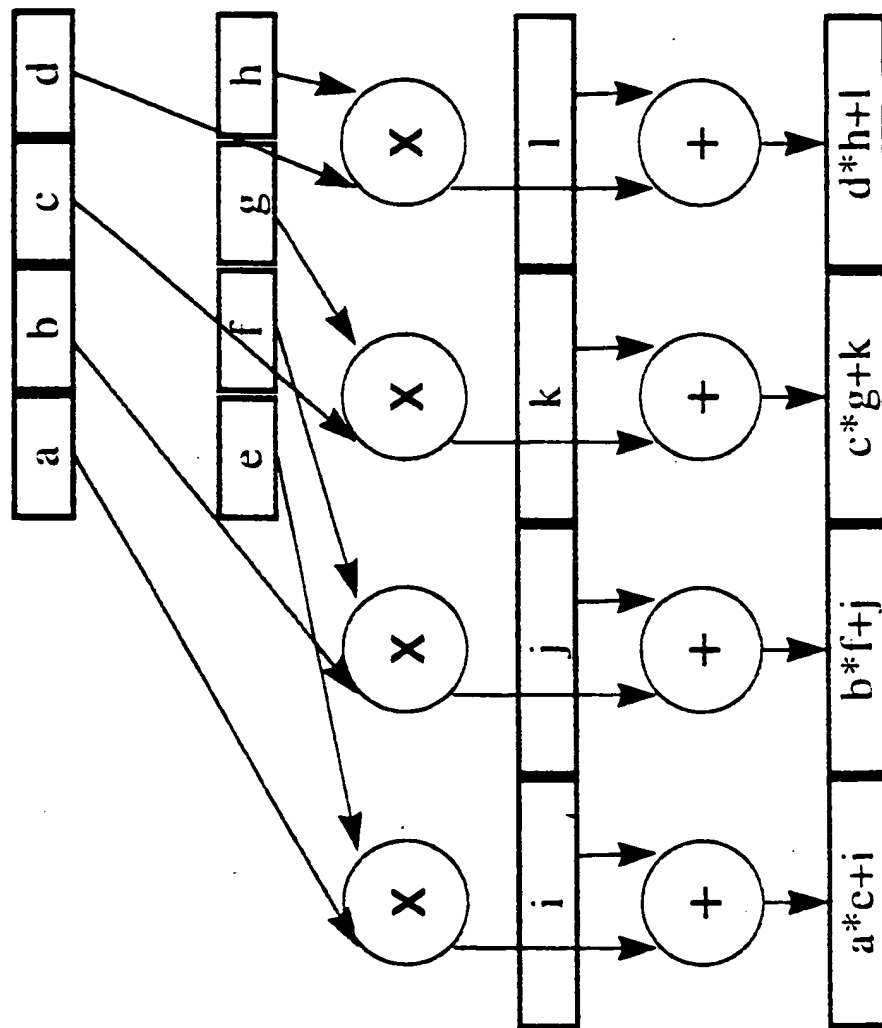


Figure 3

Group Floating-point Multiply

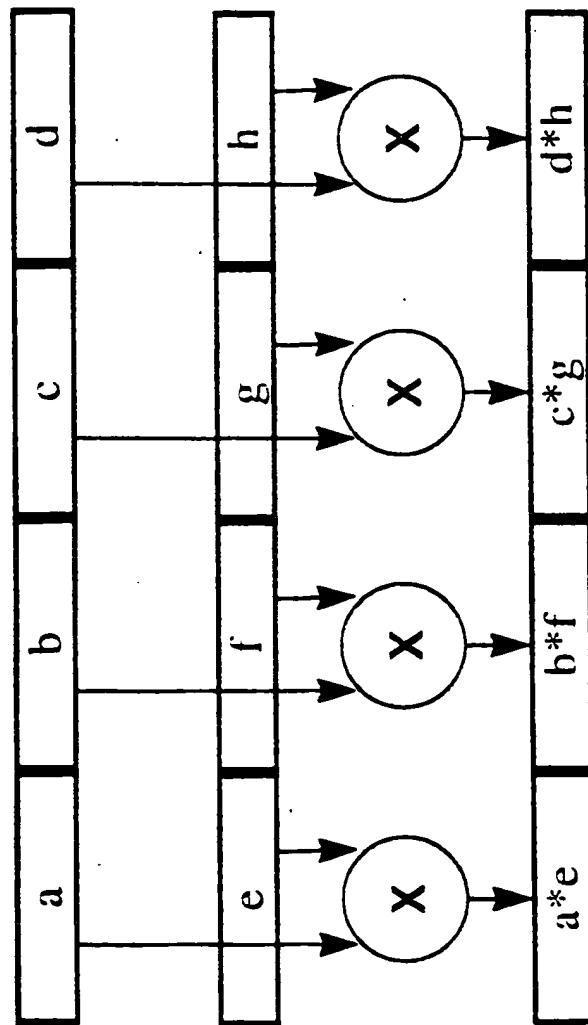


Figure 4

Group Floating-point Multiply and Add

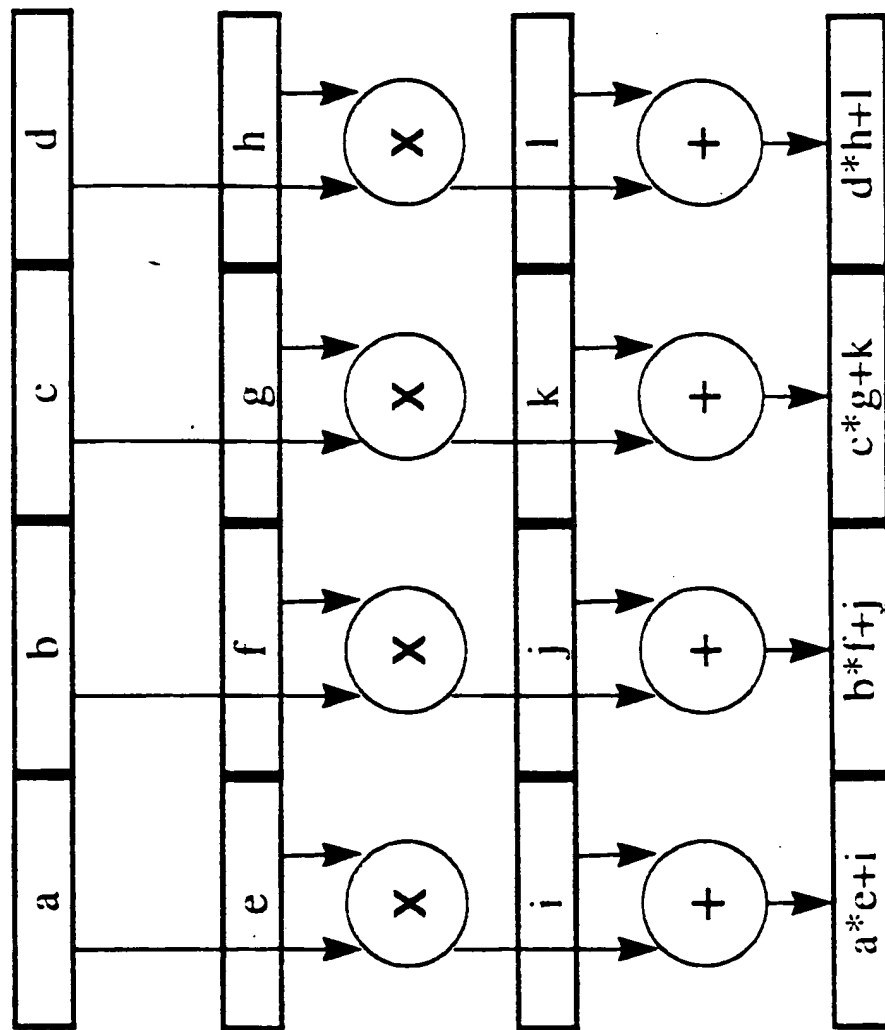


Figure 5 A

Group Fixed-point Multiply and Sum

- Group Multiply and Sum: 64/128 bits := 128×128 bits
- symbol sizes of 1, 2, 4, 8, 16, 32, 64 bits

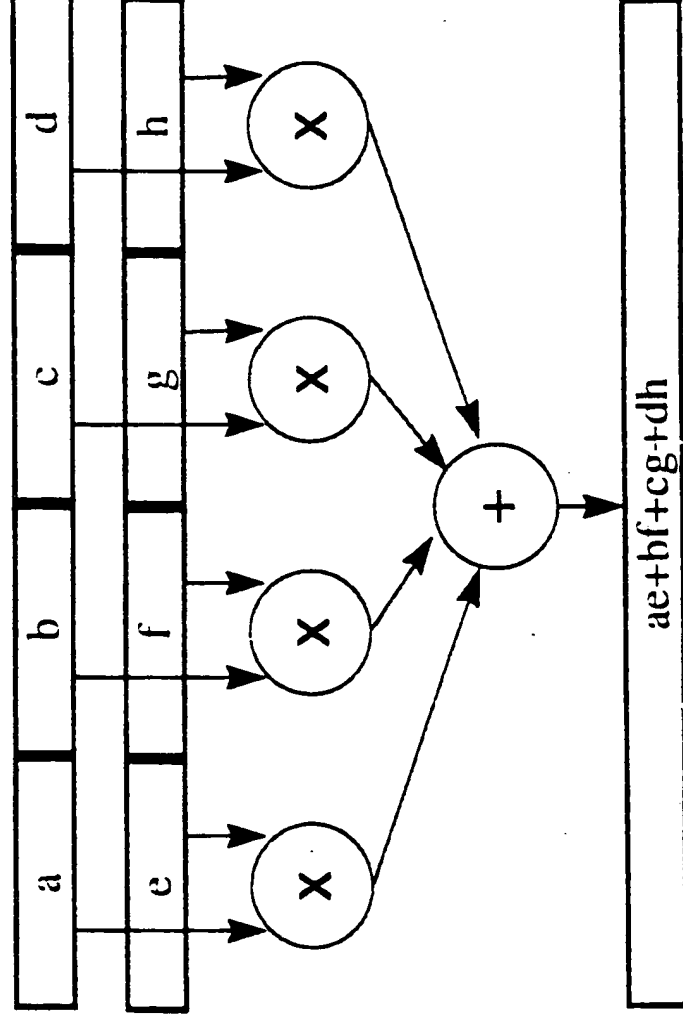


Figure 5 B

Group Fixed-point Multiply and Sum

- Group Multiply and Sum: 64/128 bits := 128*128 bits
- symbol sizes of 1, 2, 4, 8, 16, 32, 64 bits

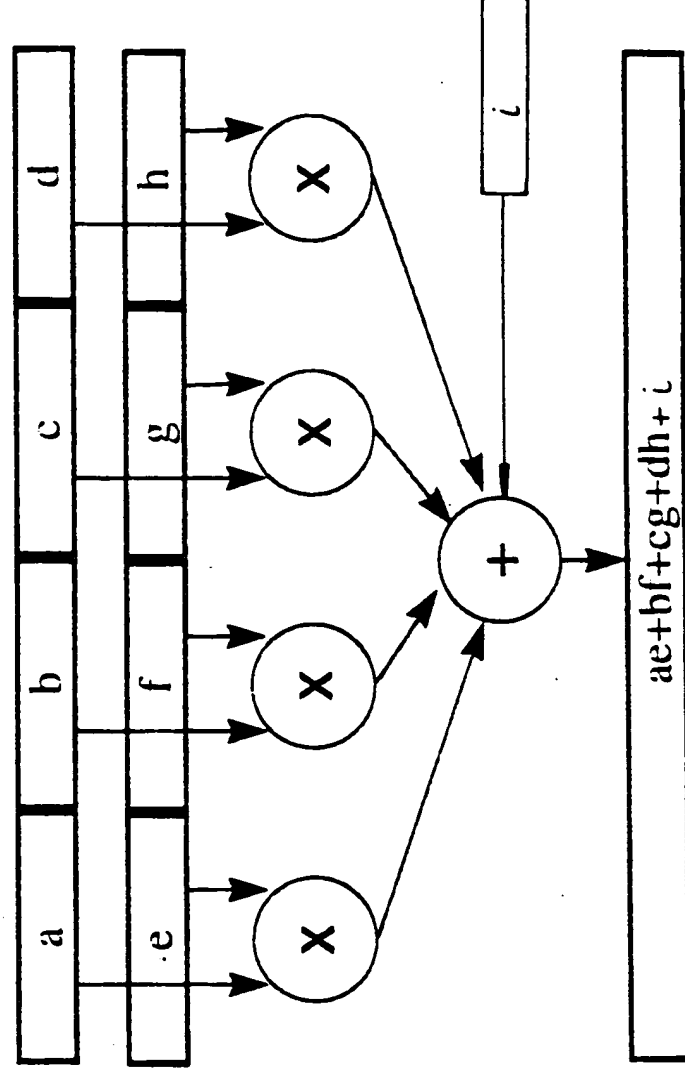
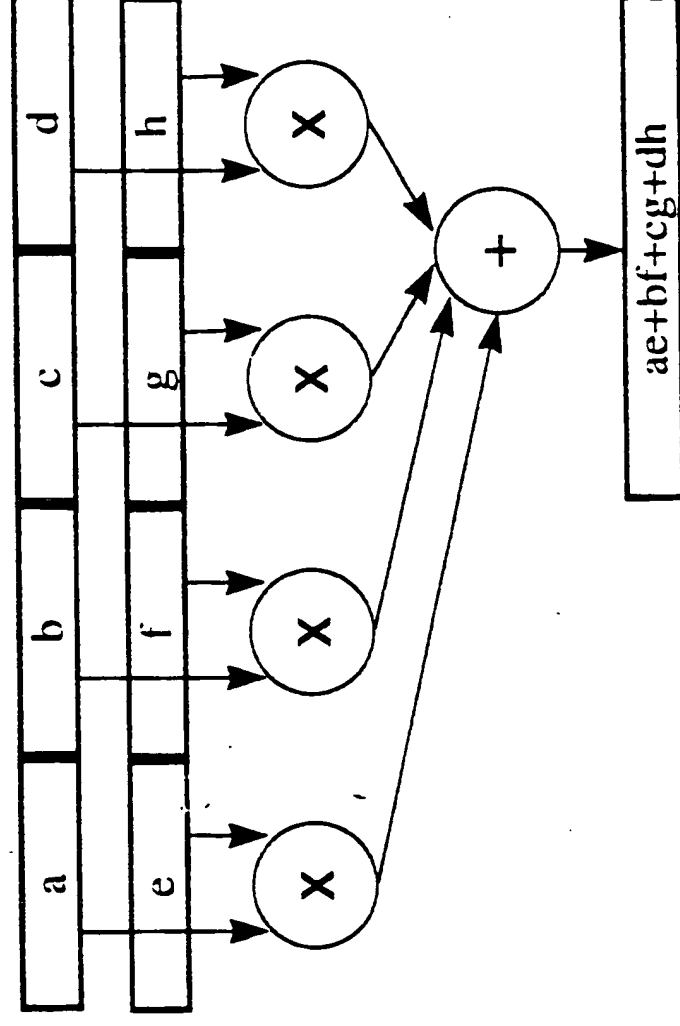


Figure 6

Group Floating-point Multiply and Sum

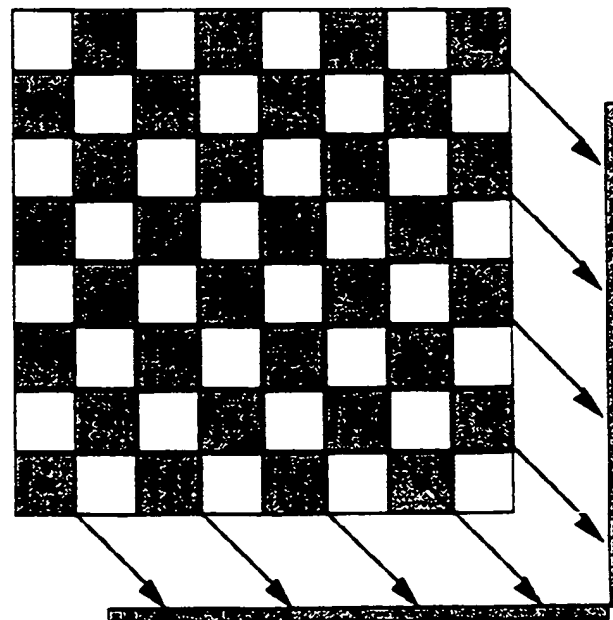
- Group Multiply and Sum: 64/128 bits := 128*128 bits
- symbol sizes of 16, 32, 64 bits



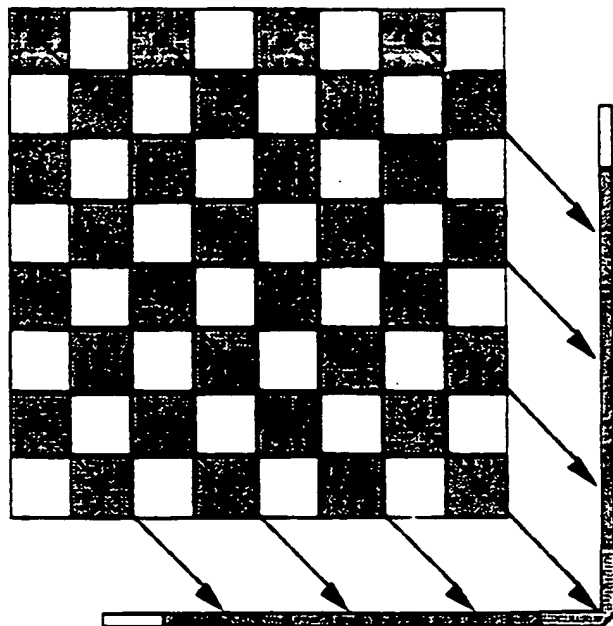
Group Convolve

- Group Convolve: 128 bits := $64 * 64$ bits
- symbol sizes of 1, 2, 4, 8, 16, 32 bits

multiplicand
(64 bits)



multiplier
(64 bits)



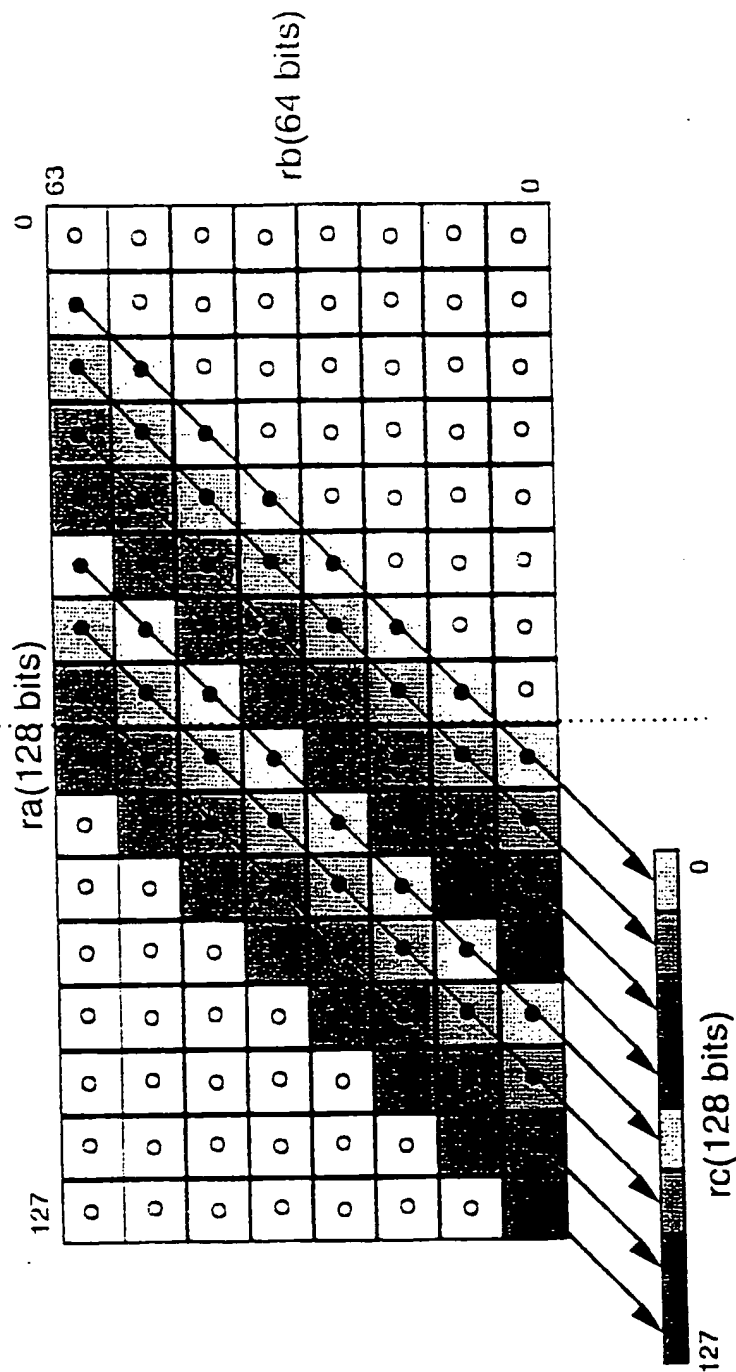
sum of products (128 bits)

Figure 7

Figure 8

Group Fixed-point Convolve

- Group Convolve: 128 bits := 128 * 64 bits
- sizes of 1, 2, 4, 8, 16, 32 bits
- signed and unsigned



Group fixed-point convolve

- Group Convolve: 128 bits := 128 * 64 bits
- symbol size of 16 bits shown

Figure 9

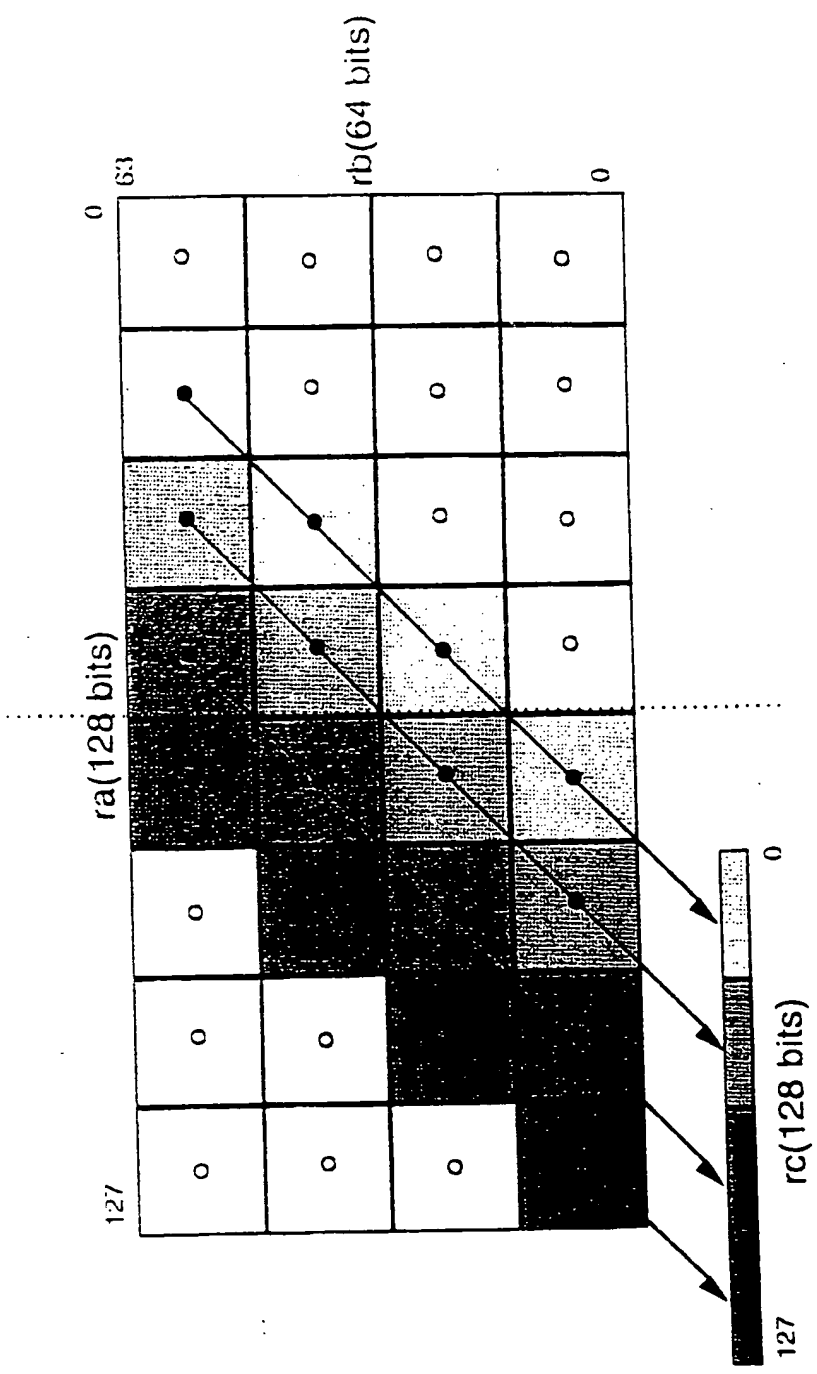


Figure 10

Group Floating-point convolve

- Group Convolve: 64 bits := $128 * 64$ bits
- sizes of 16, 32 bits

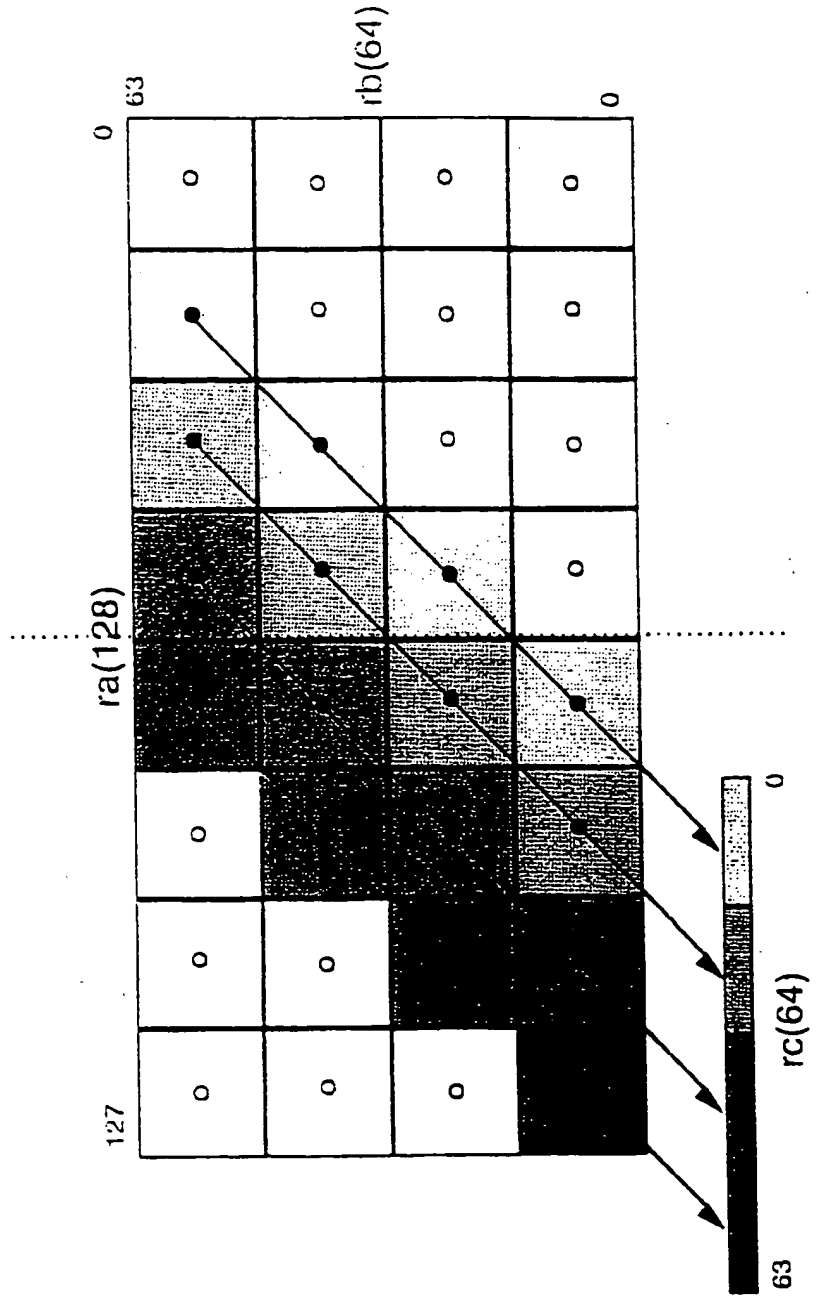
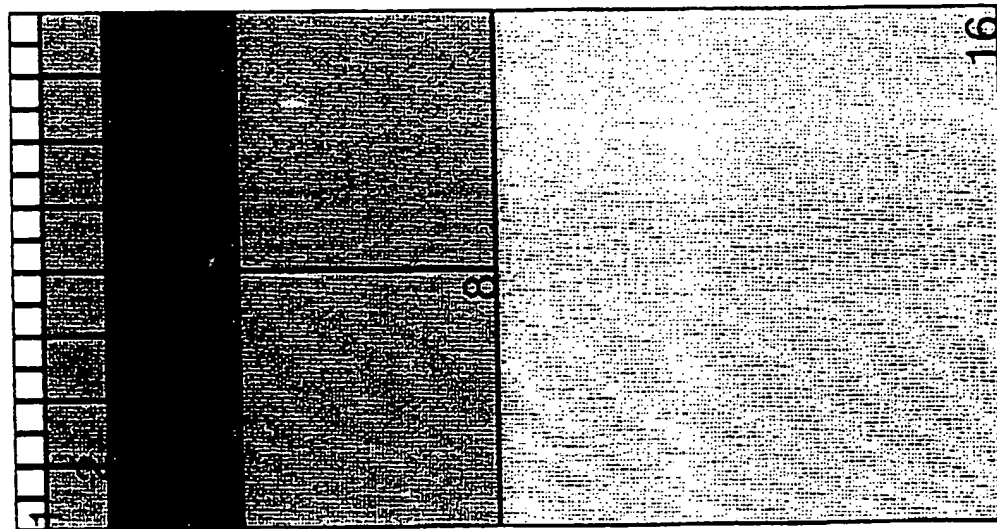


Figure 11

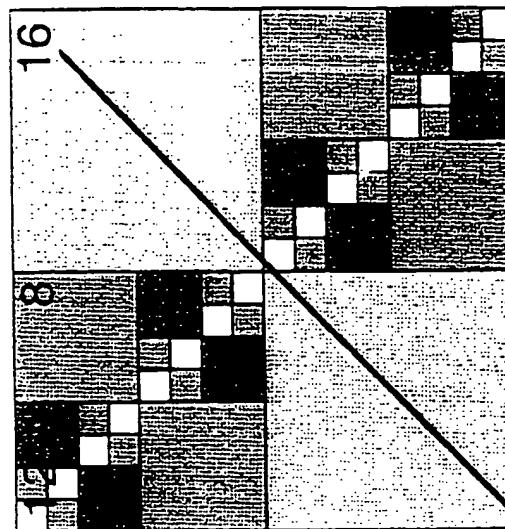
Group Integer Multiply



multiplicand



multiplier



product accumulation



Figure 12

Group Multiply-and-sum

